



# NuMI Project

## Project Update

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MINOS Collaboration Meeting

Pasadena, CA

January 5, 2002

- Baseline Change Proposal Approved!
- Status and Technical Progress Since October
- Concerns
- Summary



## Project Update

- **Baseline Change Proposal Status**
  - « (Pre-)ESAAB meetings in November/December
  - « Deputy Secretary Blake meeting one week later Dec 21.
  - « Our request is in the FY03 Budget Process
  - « Huge internal effort by DoE over the last 6 months
- **URA Performance Measures Achieved (forwarded to DOE)**
  - « Total of 45 planes of super module 1 installed (URA date 12/31)
  - « First Horn Module bid package submitted (URA date 11/15)
  - « Tunnel Boring Machine excavation Completed (URA 12/31)



## Project Update

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- DoE Office of Engineering and Construction Mgmt Independent Review Report (Burns and Roe)
  - « 41 recommendations
  - « Responses with closing dates due back to Ron Lutha January 18.
- TEC Budget (Total and FY02) remains tight (More Later)
- Mini Review Status
- Need to update commissioning goals and PMP. Backlog of CRs to implement when the BCP is approved.
- Since we set the BCP budget levels in June we have costed almost \$10M on the TEC and \$5M on the OPC → there are some new CRs in the pipeline, we are monitoring progress in separate supplemental financial table reports.



# Safety

- Safety across the Project must remain uppermost in all our minds.
  - « Injury rate on the underground construction project is improving. Still, there have been a few as well as an injury at Soudan.
  - « Take time to plan ahead, identify hazards, put controls in place, monitor, assess
- Essentially all the injuries we have had could have been prevented. And all could easily have turned out much worse.
- Nothing can be higher priority than working safely.



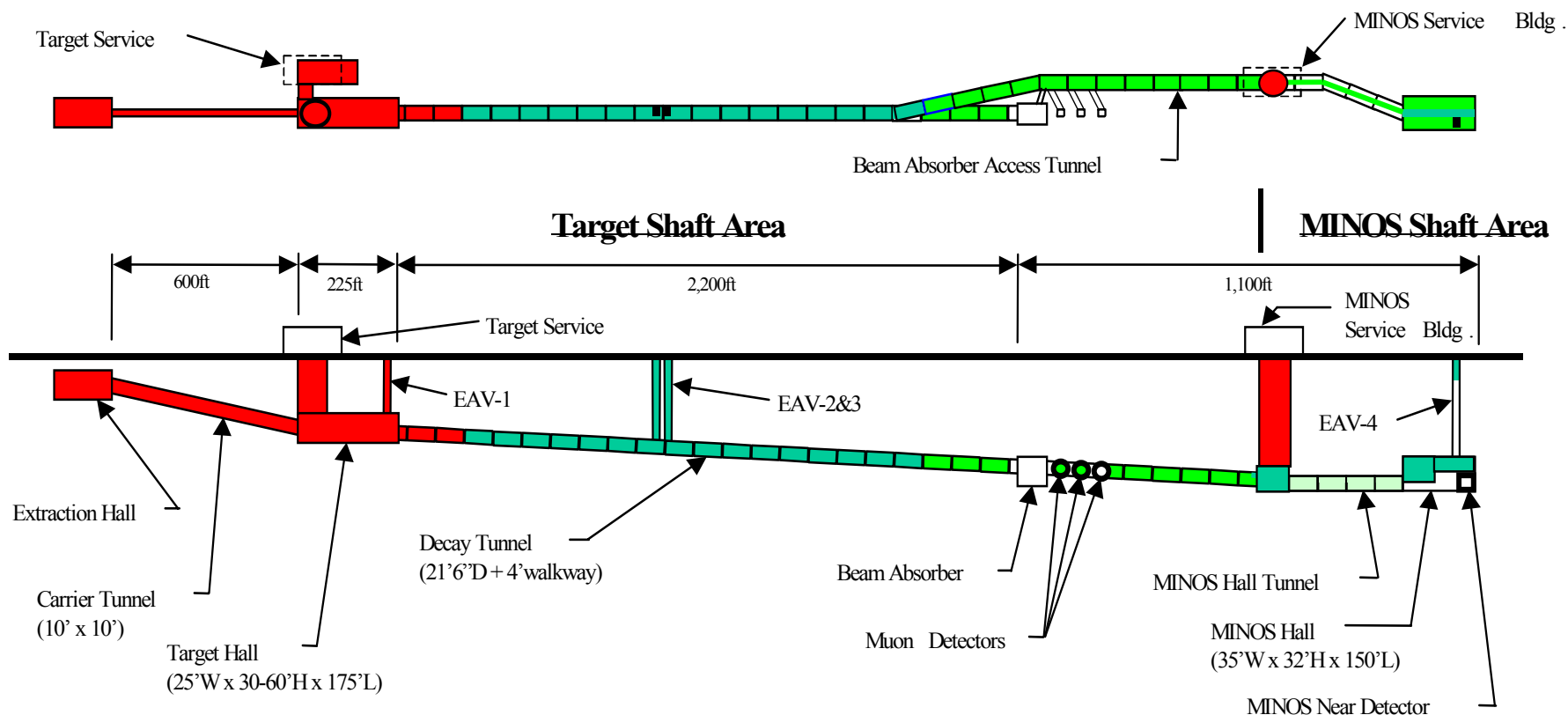
# Conventional Construction

- New Organization Functioning Very Well
  - « Meetings with contractors
  - « Consultants
  - « Finally the right size
- Healy finished with TBM !! Underground areas look very nice. You can't even tell you are underground when you are in the PS room now.
- Excavation of absorber cavern/decay tunnel, decay pipe installation now on critical path
- Service Buildings/Outfitting Bid package progressing well
- Cost increases expected
  - « Management of Healy contract
  - « SBO contract
- Schedule always a worry



# NuMI Tunnels and Halls Construction Progress

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# WBS 1.1 Technical Components

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- More Physicists from MINOS and Fermilab working on Beam
  - « FMI Studies
  - « Beam sessions at collaboration meetings
  - « Proton Intensity Working Group
- Management Change
  - « Craig Moore now Co-manager of Primary Beam (with Sam Chldress; Peter Lucas redoing optics and more)
  - « Bruce Baller now BD/NuMI Department Head



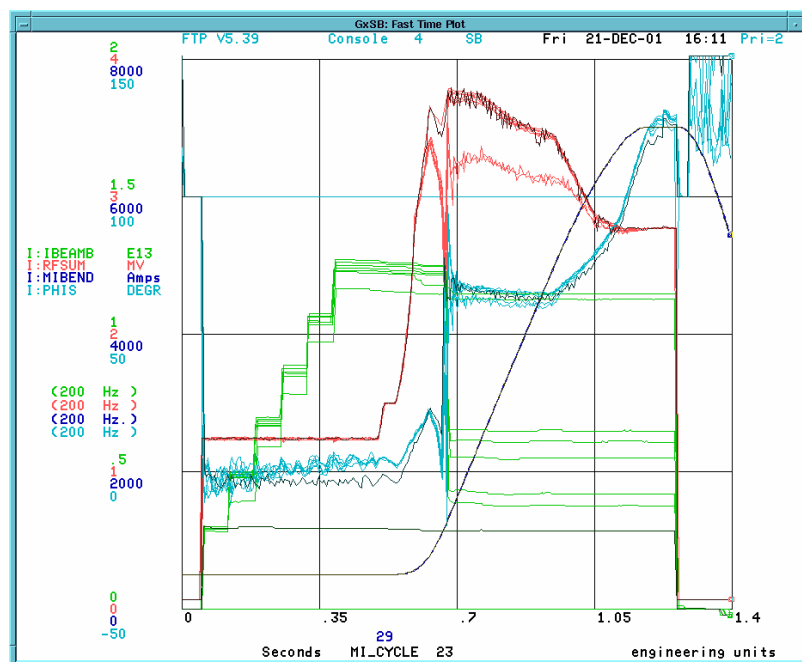
# WBS 1.1 Technical Components

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- Internal assessment reviews continue
- Significant technical progress being made in all areas. Engineering levels OK.
- Beam Monitoring Technology choice made
- Still need work on Primary Beam and Neutrino Beam Devices (more later)



# Primary Beam

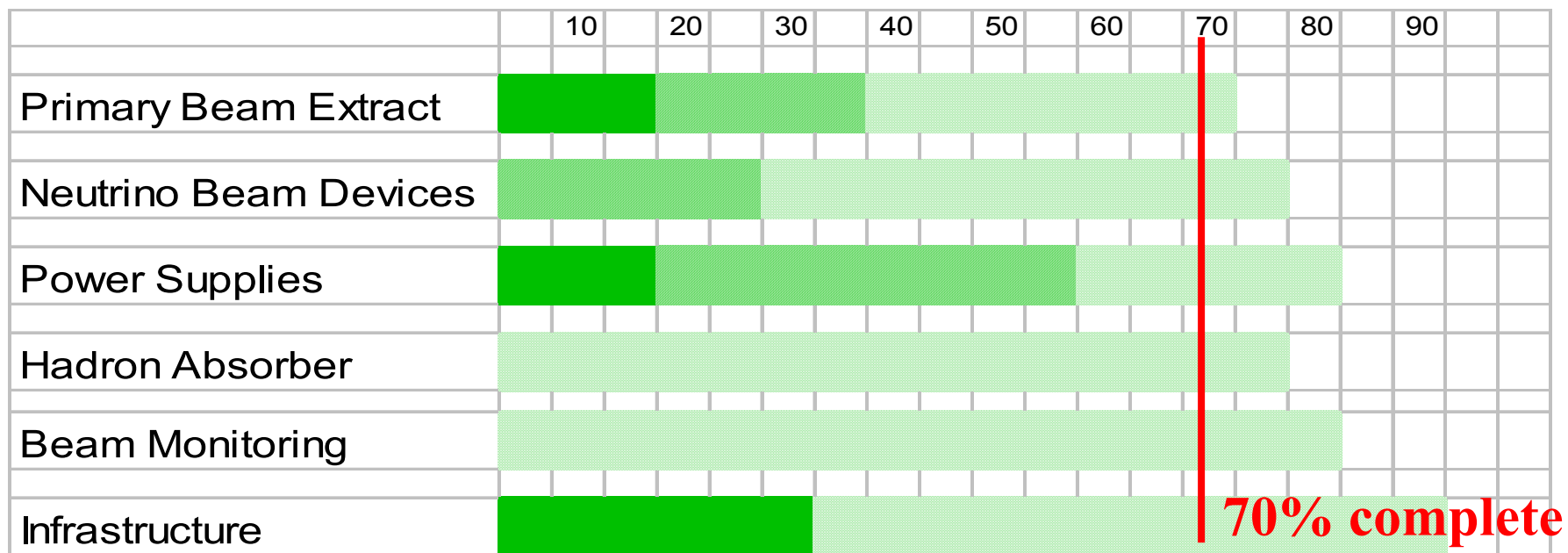


- Studies with the Main Injector have resumed. First multi batch operation in 2 years
- Significant improvements made in primary beam optics design
- Much work remains.



# Status of NuMI Technical Components

% completed for			
	Design	Fabrication	Installed

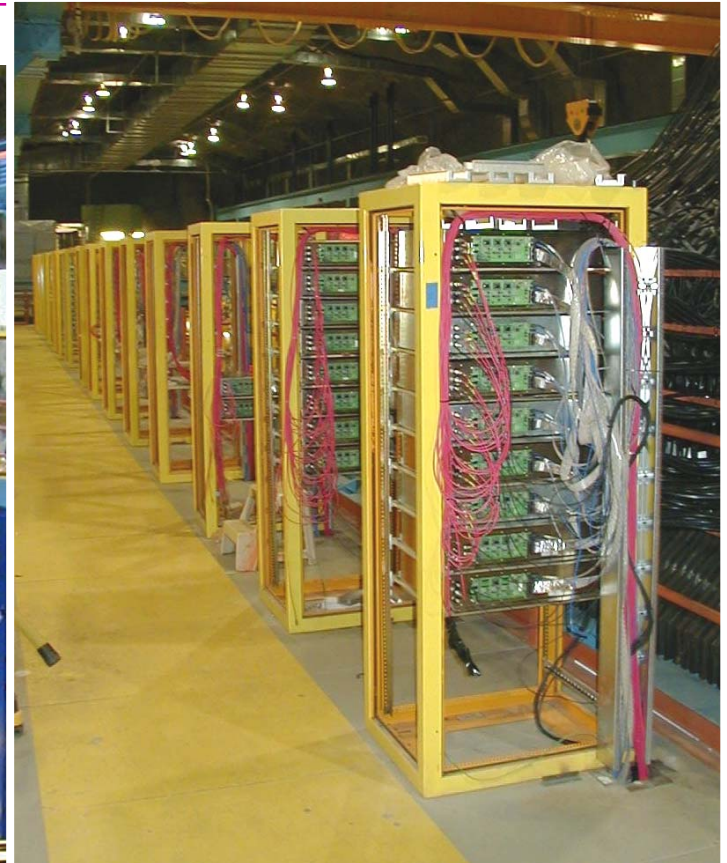
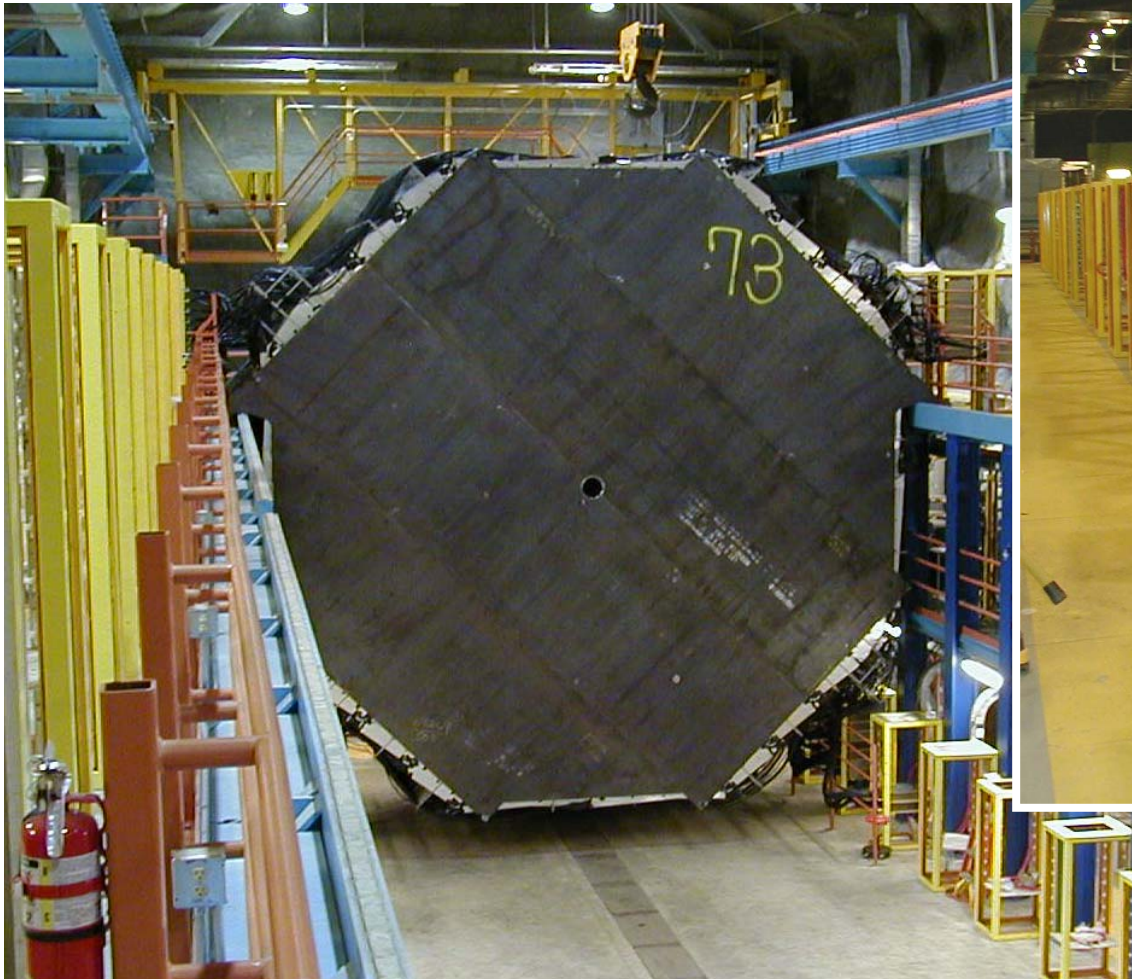




# MINOS Detector - Progress

- Detector Construction is on budget and on schedule
  - « Cost : well understood and adequate contingency available for remaining tasks
  - « Schedule: Have been meeting all internal milestones
  - « 88 Planes 1 KT !!!!!
- Excellent technical progress continued since October
  - « **Production** of all major components (steel, scintillator & electronics) for Far detector now geared up and providing deliveries to meet installation schedule.
  - « Good progress on preparing for Near detector assembly
  - « Calibration Detector analysis underway and next run scheduled

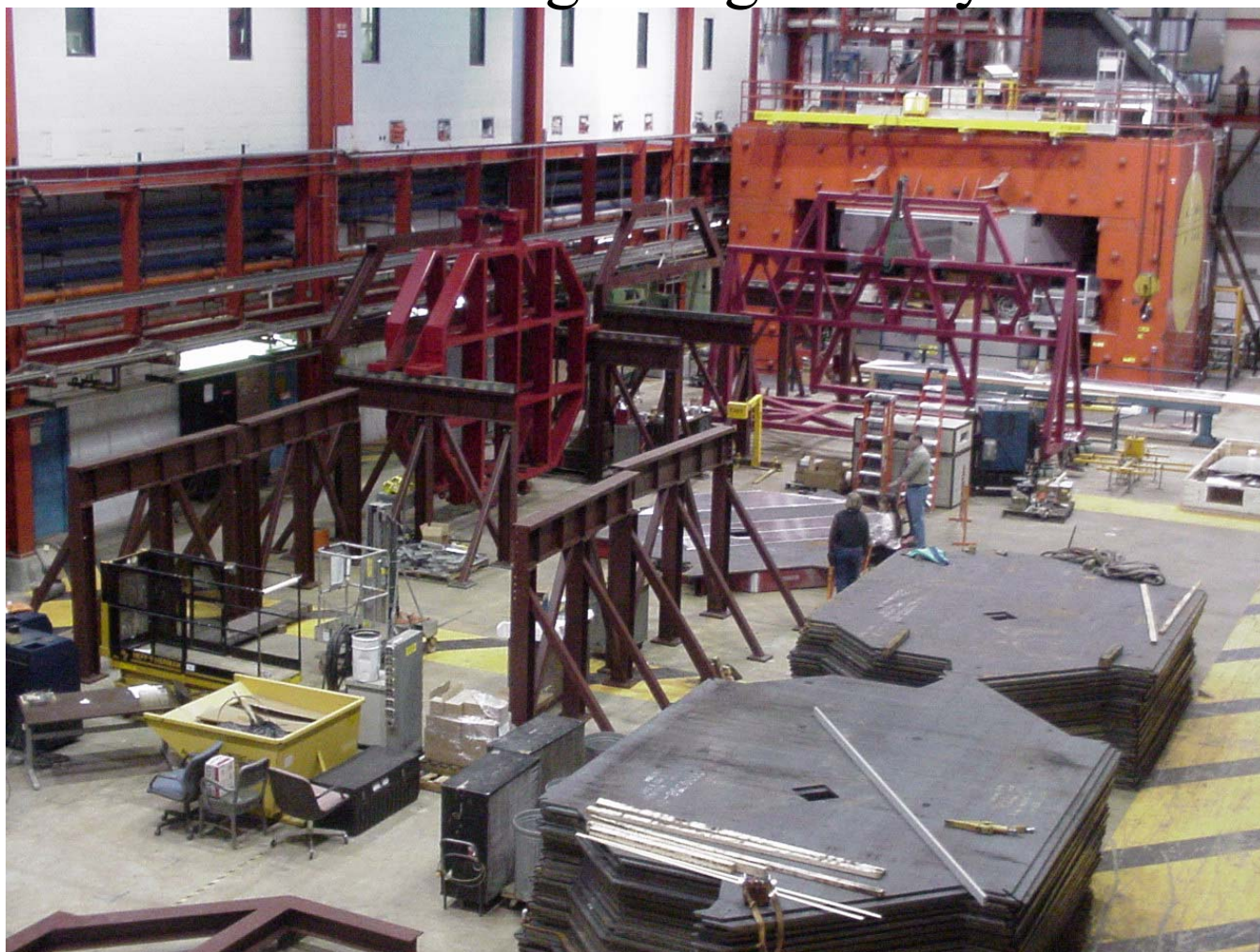
# Far Installation





# Near Detector Construction

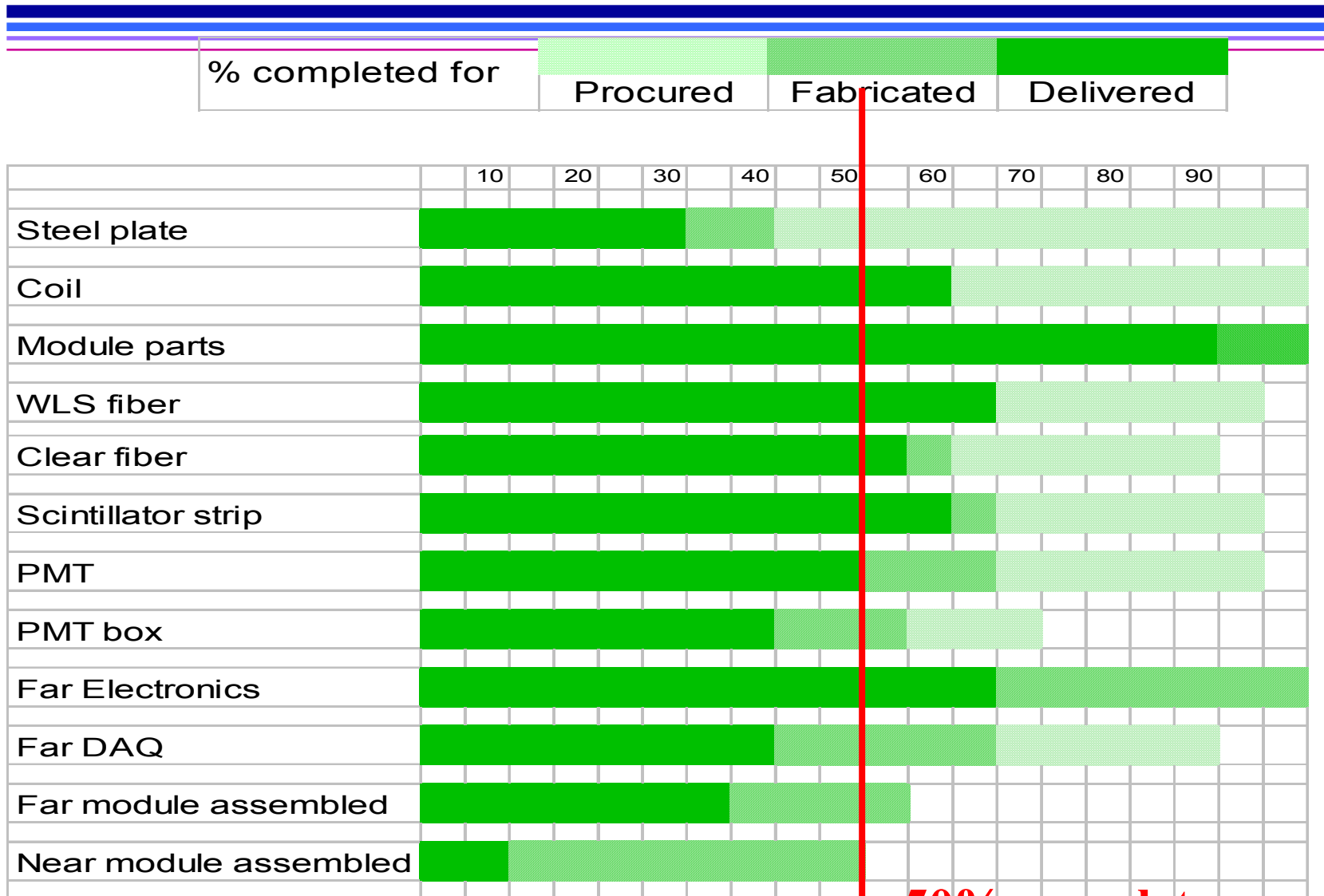
Construction beginning in early FY02





# Status of MINOS Detector Production

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50% complete



# NuMI Schedule

- The critical path remains the completion of the civil construction at Fermilab and the subsequent installation of the NuMI technical components.
  - « The next slides show the NuMI project schedule, along with our current schedule projections and some milestone dates
- The schedule contains float. The schedule is integrated and resource loaded.
- Re-estimates of critical activities are underway with the goal of accelerating the project.
- We intend to beat our proposed baseline.



# Some Project Milestones w/projection

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WBS	Milestone description	Project Baseline Dates	Current Projection	Float from Baseline (months)
	CD-4 Start Operations	3/30/2005	1/11/2005	2.5
1.1	Conductors for 1st production horn assembled	12/15/2002	11/7/2002	2
1.1	First horn installed	10/7/2004	5/17/2004	5
1.1	Start commissioning	2/1/2005	12/3/2004	3
1.2	Near detector hall excavation complete	8/1/2002	8/9/2002	0
1.2	Target hall excavation complete	8/1/2002	7/23/2002	0
1.2	Beneficial occupancy of service buildings at Fermilab	11/30/2003	9/24/2003	2
2.4	First Far detector super mod complete & tested	11/16/2002	8/13/2002	2
2.4	Far detector complete & tested	12/26/2003	9/9/2003	4
2.5	Near detector complete & tested	11/30/2004	10/1/2004	2



# Concerns

- NuMI Tunnels and Halls
  - « Accidents, Schedule, Costs
- Primary Beam and Neutrino Beam Devices
  - « Design optimization, Accelerator studies, installation plans
- Schedule
- FY02 TEC Budget
  - « Barely enough for the plan
  - « OPC is probably OK
- Total Budget
- Safety across the entire project



## Look for these signs of a healthy project over the next several months:

- Decay Pipe Installation progressing well
- Award of Service Buildings Outfitting Contract
- Continued Success on Far Det Installation and beginning of calibration and operation
- Ramp Up Near Detector surface assembly
- Progress on Primary Beam and Neutrino Beam Devices designs



# Summary

- We have a new baseline.
- MINOS Detector progress is excellent (and must stay that way).
- A critical year ahead on Conventional Construction and Beamline Design.
- Not a bad year so far. There is much work ahead. If we keep focussed, I believe we could see beam in the detectors 3 years from today.



# Submission of Rebaseline Proposal (The proposal submitted in July)

- Refined cost estimate and schedule submitted
- Included in support of the Rebaseline proposal package (and updated since) were
  - « Project overall schedule and milestones
  - « Contingency Analysis table and text
  - « Cost Variance Analysis table and text
  - « Updated “Summary of NuMI Project” document which describes project scope and management

	Current	Rebaseline Proposal	Increase
TEC	\$76.2M	\$109.2M	\$33M
OPC	\$62.2M	\$62.2M	\$0
TPC	\$138.4M	\$171.4M	\$33M
CD4	Sep 2003	Sep 2005	

# NuMI Decay Tunnel

